



EXPRESS MAIL NO. EV336652262US

1

SEQUENCE LISTING

<110> Finlay, B. Brett
Kenny, Brendan
DeVinney, Rebekah
Stein, Marcus

JUL 19 2004

TECH CENTER 1609/2004

<120> HOST RECEPTOR FOR PATHOGENIC BACTERIA

<130> 482112.402

<140> US 09/189,415

<141> 1998-11-10

<160> 13

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1920

<212> DNA

<213> Escherichia coli

<400> 1

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tgaggttggg gtgggggtggg ggggcgtttt actagcgtta atgtttcaga gaacaacgtt 1800
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<210> 2
<211> 549
<212> PRT
<213> Escherichia coli

<220>
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Gly Thr Gly His Leu Ile Ser Ser Thr Gly Ala Leu Gly Ser Arg Ser
35 40 45
Leu Phe Ser Pro Leu Arg Asn Ser Met Ala Asp Ser Val Asp Ser Arg
50 55 60
Asp Ile Pro Gly Leu Pro Thr Asn Pro Ser Arg Leu Ala Ala Ala Thr
65 70 75 80
Ser Glu Thr Cys Leu Leu Gly Gly Phe Glu Val Leu His Asp Lys Gly
85 90 95
Pro Leu Asp Ile Leu Asn Thr Gln Ile Gly Pro Ser Ala Phe Arg Val
100 105 110
Glu Val Gln Ala Asp Gly Thr His Ala Ala Ile Gly Glu Lys Asn Gly
115 120 125
Leu Glu Val Ser Val Thr Leu Ser Pro Gln Glu Trp Ser Ser Leu Gln
130 135 140
Ser Ile Asp Thr Glu Gly Lys Asn Arg Phe Val Phe Thr Gly Gly Arg
145 150 155 160
Gly Gly Ser Gly His Pro Met Val Thr Val Ala Ser Asp Ile Ala Glu
165 170 175
Ala Arg Thr Arg Ile Leu Ala Lys Leu Asp Pro Asp Asn His Gly Gly
180 185 190
Arg Gln Pro Lys Asp Val Asp Thr Arg Ser Val Gly Val Gly Ser Ala
195 200 205
Ser Gly Ile Asp Asp Gly Val Val Ser Glu Thr His Thr Ser Thr Thr
210 215 220
Asn Ser Ser Val Arg Ser Asp Pro Lys Phe Trp Val Ser Val Gly Ala
225 230 235 240
Ile Ala Ala Gly Leu Ala Gly Leu Ala Ala Thr Gly Ile Ala Gln Ala
245 250 255
Leu Ala Leu Thr Pro Glu Pro Asp Asp Pro Thr Thr Thr Asp Pro Asp
260 265 270
Gln Ala Ala Asn Ala Ala Glu Ser Ala Thr Lys Asp Gln Leu Thr Gln
275 280 285
Glu Ala Phe Lys Asn Pro Glu Asn Gln Lys Val Asn Ile Asp Ala Asn
290 295 300
Gly Asn Ala Ile Pro Ser Gly Glu Leu Xaa Asp Asp Ile Val Glu Gln

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Ile	Ala	Gln	Gln	Ala	Lys	Glu	Ala	Gly	Glu	Val	Ala	Arg	Gln	Gln	Ala
		325						330						335	
Val	Glu	Ser	Asn	Ala	Gln	Ala	Gln	Gln	Arg	Tyr	Glu	Asp	Gln	His	Ala
		340						345					350		
Arg	Arg	Gln	Glu	Glu	Leu	Gln	Leu	Ser	Ser	Gly	Ile	Gly	Tyr	Gly	Leu
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Ser	Ser	Ala	Leu	Ile	Val	Ala	Gly	Gly	Ile	Gly	Ala	Gly	Val	Thr	Thr
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Ala	Leu	His	Arg	Arg	Asn	Gln	Pro	Ala	Glu	Gln	Thr	Thr	Thr	Thr	Thr
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Thr	His	Thr	Val	Val	Gln	Gln	Gln	Thr	Gly	Gly	Ile	Pro	Gln	His	Lys
		405						410					415		
Val	Ala	Leu	Met	Pro	Gln	Glu	Arg	Arg	Arg	Phe	Ser	Asp	Arg	Arg	Asp
		420					425					430			
Ser	Gln	Gly	Ser	Val	Ala	Ser	Thr	His	Trp	Ser	Asp	Ser	Ser	Ser	Glu
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Val	Val	Asn	Pro	Tyr	Ala	Glu	Val	Gly	Gly	Ala	Arg	Asn	Ser	Leu	Ser
	450					455				460					
Ala	His	Gln	Pro	Glu	Glu	His	Ile	Tyr	Asp	Glu	Val	Ala	Ala	Asp	Pro
465				470					475						480
Gly	Tyr	Ser	Val	Ile	Gln	Asn	Phe	Ser	Gly	Ser	Gly	Pro	Val	Thr	Gly
		485						490					495		
Arg	Leu	Ile	Gly	Thr	Pro	Gly	Gln	Gly	Ile	Gln	Ser	Thr	Tyr	Ala	Leu
	500						505					510			
Leu	Ala	Asn	Ser	Gly	Gly	Leu	Arg	Leu	Gly	Met	Gly	Gly	Leu	Thr	Ser
	515					520					525				
Gly	Gly	Glu	Thr	Ala	Val	Ser	Ser	Val	Asn	Ala	Ala	Pro	Thr	Pro	Gly
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Pro	Val	Arg	Phe	Val											
545															

<210> 3

<211> 1723

<212> DNA

<213> Escherichia coli

<400> 3

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ccgttgggat ctcgtgcgct atttacgcct gtaaggaatt ctatggctga ttctggcgac 180
aatcgtgcca gtgatgttcc tggacttcct gtaaaccgga tgcgcctggc ggcgtctgag 240
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aggcagattg gctcttcggt atttcgagtt gaaactcagg aagatggtaa acatattgct 360
gtcgggcaga ggaatgggtg tgagacctct gttgttttaa gtgatcaaga gtacgctcgc 420
ttgcagtcca ttgatcctga aggtaaaagac aaatttgtat ttactggagg ccgtgggtgt 480
gctgggcatg ctatggtcac cgttgcttca gatatcacgg aagcccgcca aaggatactg 540
gagctgttag agcccaaagg gaccggggag tccaaagggt ctggggagtc aaaaggcgtt 600
ggggagttag gggagtcaaa tagcgggtgcg gaaaacacca cagaaactca gacctcaacc 660
tcaacttcca gccttcgttc agatcctaaa ctttggttgg cgttggggac tgttgctaca 720
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gatagcccaa ccacgaccga ccctgatgca gctgcaagtg caactgaaac tgcgacaaga 840
gatcagttaa cgaaagaagc gttccagaac ccagataatc aaaaagttaa tatcgatgag 900
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caggctaaag cagcaggcga agaggccaaa cagcaagcca ttgaaaataa tgctcaggcg 1020
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gctggctacg gtcttagtgg cgcattgatt cttgggtggg gaattggtgt tgccgtcacc 1140
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acaactacaa gcgcacgtac ggtagagaat aagcctgcaa ataatacacc tgcacagggc 1260
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<210> 4

<211> 559

<212> PRT

<213> Escherichia coli

<400> 4

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 20           25           30
Gly Gln Leu Ile Asn Ser Thr Gly Pro Leu Gly Ser Arg Ala Leu Phe
 35           40           45
Thr Pro Val Arg Asn Ser Met Ala Asp Ser Gly Asp Asn Arg Ala Ser
 50           55           60
Asp Val Pro Gly Leu Pro Val Asn Pro Met Arg Leu Ala Ala Ser Glu
 65           70           75           80
Ile Thr Leu Asn Asp Gly Phe Glu Val Leu His Asp His Gly Pro Leu
 85           90           95
Asp Thr Leu Asn Arg Gln Ile Gly Ser Ser Val Phe Arg Val Glu Thr
100          105          110
Gln Glu Asp Gly Lys His Ile Ala Val Gly Gln Arg Asn Gly Val Glu
115          120          125
Thr Ser Val Val Leu Ser Asp Gln Glu Tyr Ala Arg Leu Gln Ser Ile
130          135          140
Asp Pro Glu Gly Lys Asp Lys Phe Val Phe Thr Gly Gly Arg Gly Gly
145          150          155          160
Ala Gly His Ala Met Val Thr Val Ala Ser Asp Ile Thr Glu Ala Arg
165          170          175
Gln Arg Ile Leu Glu Leu Leu Glu Pro Lys Gly Thr Gly Glu Ser Lys
180          185          190
Gly Ala Gly Glu Ser Lys Gly Val Gly Glu Leu Arg Glu Ser Asn Ser
195          200          205
Gly Ala Glu Asn Thr Thr Glu Thr Gln Thr Ser Thr Ser Thr Ser Ser
210          215          220
Leu Arg Ser Asp Pro Lys Leu Trp Leu Ala Leu Gly Thr Val Ala Thr
225          230          235          240
Gly Leu Ile Gly Leu Ala Ala Thr Gly Ile Val Gln Ala Leu Ala Leu
245          250          255
Thr Pro Glu Pro Asp Ser Pro Thr Thr Thr Asp Pro Asp Ala Ala Ala
260          265          270
Ser Ala Thr Glu Thr Ala Thr Arg Asp Gln Leu Thr Lys Glu Ala Phe

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305	310	315
Gln Ala Lys Ala Ala Gly Glu Glu Ala Lys Gln Gln Ala Ile Glu Asn		
	325	330
Asn Ala Gln Ala Gln Lys Lys Tyr Asp Glu Gln Gln Ala Lys Arg Gln		
	340	345
Glu Glu Leu Lys Val Ser Ser Gly Ala Gly Tyr Gly Leu Ser Gly Ala		
	355	360
Leu Ile Leu Gly Gly Gly Ile Gly Val Ala Val Thr Ala Ala Leu His		
	370	375
Arg Lys Asn Gln Pro Val Glu Gln Thr Thr Thr Thr Thr Thr Thr Thr		
385	390	395
Thr Thr Thr Ser Ala Arg Thr Val Glu Asn Lys Pro Ala Asn Asn Thr		
	405	410
Pro Ala Gln Gly Asn Val Asp Thr Pro Gly Ser Glu Asp Thr Met Glu		
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Ser Arg Arg Ser Ser Met Ala Ser Thr Ser Ser Thr Phe Phe Asp Thr		
	435	440
Ser Ser Ile Gly Gly Pro Cys Arg Ile Arg Met Leu Met Leu Lys His		
	450	455
Arg Cys Met Ile Arg Arg Cys Arg Leu Leu Ile Leu Ile Arg Leu Phe		
465	470	475
Arg Ile Trp Gly Ile Gln Ile Ser Val Val Tyr Ser Thr Ile Gln His		
	485	490
Pro Pro Arg Asp Thr Thr Asp Asn Gly Ala Arg Leu Leu Gly Asn Pro		
	500	505
Ser Ala Gly Ile Gln Ser Thr Tyr Ala Arg Leu Ala Leu Ser Gly Gly		
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Asn Thr Ser Asn Asn Pro Pro Ala Pro Gly Ser His Arg Phe Val		
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<210> 5

<211> 1460

<212> DNA

<213> Escherichia coli

<400> 5

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aaaggggggc ttgatactct taactctgct attggatctt cgttattccg tgttgaaact 180
cgggatgatg gcagccatgt tgctatcggg caaaaaaatg gcctcgagac cactgttggt 240
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gtatttactg gaggccgcgg tggcccaggg catgctatgg tcacgggtgc ttcagatata 360
gccgaagccc gtcagaggat aatagataaa ttagaaccaa aggatacaaa ggagacgaag 420
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gacccaatca ctaccgaccc tgatgctgca gcaaacacag ctgaagcagc ggcaaaagat 660
cagttaacga aagaagcatt ccagaaccca gataaccaga aagttaatat cgatgagaac 720

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<210> 6

<211> 484

<212> PRT

<213> Escherichia coli

<400> 6

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Gly Ala Leu Glu Val Leu His Asp Lys Gly Gly Leu Asp Thr Leu Asn
 35          40          45
Ser Ala Ile Gly Ser Ser Leu Phe Arg Val Glu Thr Arg Asp Asp Gly
 50          55          60
Ser His Val Ala Ile Gly Gln Lys Asn Gly Leu Glu Thr Thr Val Val
 65          70          75          80
Leu Ser Glu Gln Glu Phe Ser Ser Leu Gln Ser Leu Asp Pro Glu Gly
 85          90          95
Lys Asn Lys Phe Val Phe Thr Gly Gly Arg Gly Gly Pro Gly His Ala
100          105          110
Met Val Thr Val Ala Ser Asp Ile Ala Glu Ala Arg Gln Arg Ile Ile
115          120          125
Asp Lys Leu Glu Pro Lys Asp Thr Lys Glu Thr Lys Glu Pro Gly Asp
130          135          140
Pro Asn Ser Gly Glu Gly Lys Ile Ile Glu Ile His Thr Ser Thr Ser
145          150          155          160
Thr Ser Ser Leu Arg Ala Asp Pro Lys Leu Trp Leu Ser Leu Gly Thr
165          170          175
Ile Ala Ala Gly Leu Ile Gly Met Ala Ala Thr Gly Ile Ala Gln Ala
180          185          190
Val Ala Leu Thr Pro Glu Pro Asp Asp Pro Ile Thr Thr Asp Pro Asp
195          200          205
Ala Ala Ala Asn Thr Ala Glu Ala Ala Ala Lys Asp Gln Leu Thr Lys
210          215          220
Glu Ala Phe Gln Asn Pro Asp Asn Gln Lys Val Asn Ile Asp Glu Asn
225          230          235          240
Gly Asn Ala Ile Pro Ser Gly Glu Leu Lys Asp Asp Val Val Ala Gln
245          250          255
Ile Ala Glu Gln Ala Lys Ala Ala Gly Glu Gln Ala Arg Gln Glu Ala
260          265          270
Ile Glu Ser Asn Ser Gln Ala Gln Gln Lys Tyr Asp Glu Gln His Ala

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Lys Arg Glu Gln Glu Met Ser Leu Ser Ser Gly Val Gly Tyr Gly Ile
      290      295      300
Ser Gly Ala Leu Ile Leu Gly Gly Gly Ile Gly Ala Gly Val Thr Ala
305      310      315      320
Ala Leu His Arg Lys Asn Gln Pro Ala Glu Gln Thr Ile Thr Thr Arg
      325      330      335
Thr Val Val Asp Asn Gln Pro Thr Asn Asn Ala Ser Ala Gln Gly Asn
      340      345      350
Thr Asp Thr Ser Gly Pro Glu Glu Ser Pro Ala Ser Arg Arg Asn Ser
      355      360      365
Asn Ala Ser Leu Ala Ser Asn Gly Ser Asp Thr Ser Ser Thr Gly Thr
      370      375      380
Val Glu Asn Pro Tyr Ala Asp Val Gly Met Pro Arg Asn Asp Ser Leu
385      390      395      400
Ala Arg Ile Ser Glu Glu Pro Ile Tyr Asp Glu Val Ala Ala Asp Pro
      405      410      415
Asn Tyr Ser Val Ile Gln His Phe Ser Gly Asn Ser Pro Val Thr Gly
      420      425      430
Arg Leu Val Gly Thr Pro Gly Gln Gly Ile Gln Ser Thr Tyr Ala Leu
      435      440      445
Leu Ala Ser Ser Gly Gly Leu Arg Leu Gly Met Gly Gly Leu Thr Gly
      450      455      460
Gly Gly Glu Ser Ala Val Ser Thr Ala Asn Ala Ala Thr Pro Gly Pro
465      470      475      480
Ala Arg Phe Val

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<210> 7
<211> 30
<212> PRT
<213> Escherichia coli

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<400> 7
Pro Ile Gly Asn Leu Gly Asn Asn Val Asn Gly Asn His Leu Ile Pro
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Pro Ala Pro Pro Leu Pro Ser Gln Thr Asp Gly Ala Ala Arg
      20           25           30

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<210> 8
<211> 26
<212> DNA
<213> Artificial Sequence

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<220>
<223> Primer

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<400> 8
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<210> 9
<211> 30
<212> DNA

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<213> Artificial Sequence

<220>

<223> Primer

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30

<210> 10

<211> 549

<212> PRT

<213> Escherichia coli

<400> 10

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			20					25					30		
Gly	Thr	Gly	His	Leu	Ile	Ser	Ser	Thr	Gly	Ala	Leu	Gly	Ser	Arg	Ser
		35					40					45			
Leu	Phe	Ser	Pro	Leu	Arg	Asn	Ser	Met	Ala	Asp	Ser	Val	Asp	Ser	Arg
	50					55				60					
Asp	Ile	Pro	Gly	Leu	Pro	Thr	Asn	Pro	Ser	Arg	Leu	Ala	Ala	Ala	Thr
65				70						75					80
Ser	Glu	Thr	Cys	Leu	Leu	Gly	Gly	Phe	Glu	Val	Leu	His	Asp	Lys	Gly
			85					90						95	
Pro	Leu	Asp	Ile	Leu	Asn	Thr	Gln	Ile	Gly	Pro	Ser	Ala	Phe	Arg	Val
		100						105						110	
Glu	Val	Gln	Ala	Asp	Gly	Thr	His	Ala	Ala	Ile	Gly	Glu	Lys	Asn	Gly
		115					120					125			
Leu	Glu	Val	Ser	Val	Thr	Leu	Ser	Pro	Gln	Glu	Trp	Ser	Ser	Leu	Gln
	130					135					140				
Ser	Ile	Asp	Thr	Glu	Gly	Lys	Asn	Arg	Phe	Val	Phe	Thr	Gly	Gly	Arg
145					150					155					160
Gly	Gly	Ser	Gly	His	Pro	Met	Val	Thr	Val	Ala	Ser	Asp	Ile	Ala	Glu
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Ala	Arg	Thr	Lys	Ile	Leu	Ala	Lys	Leu	Asp	Pro	Asp	Asn	His	Gly	Gly
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Ser	Gly	Ile	Asp	Asp	Gly	Val	Val	Ser	Glu	Thr	His	Thr	Ser	Thr	Thr
	210				215						220				
Asn	Ser	Ser	Val	Arg	Ser	Asp	Pro	Lys	Phe	Trp	Val	Ser	Val	Gly	Ala
225				230						235					240
Ile	Ala	Ala	Gly	Leu	Ala	Gly	Leu	Ala	Ala	Thr	Gly	Ile	Ala	Gln	Ala
			245					250						255	
Leu	Ala	Leu	Thr	Pro	Glu	Pro	Asp	Asp	Pro	Thr	Thr	Thr	Asp	Pro	Asp
		260					265						270		
Gln	Ala	Ala	Asn	Ala	Ala	Glu	Ser	Ala	Thr	Lys	Asp	Gln	Leu	Thr	Gln
	275					280						285			
Glu	Ala	Phe	Lys	Asn	Pro	Glu	Asn	Gln	Lys	Val	Asn	Ile	Asp	Ala	Asn
	290					295					300				
Gly	Asn	Ala	Ile	Pro	Ser	Gly	Glu	Leu	Lys	Asp	Asp	Ile	Val	Glu	Gln
305				310						315					320
Ile	Ala	Gln	Gln	Ala	Lys	Glu	Ala	Gly	Glu	Val	Ala	Arg	Gln	Gln	Ala

Val	Glu	Ser	Asn	Ala	Gln	Ala	Gln	Gln	Arg	Tyr	Glu	Asp	Gln	His	Ala
			340					345					350		
Arg	Arg	Gln	Glu	Glu	Leu	Gln	Leu	Ser	Ser	Gly	Ile	Gly	Tyr	Gly	Leu
		355					360					365			
Ser	Ser	Ala	Leu	Ile	Val	Ala	Gly	Gly	Ile	Gly	Ala	Gly	Val	Thr	Thr
	370					375					380				
Ala	Leu	His	Arg	Arg	Asn	Gln	Pro	Ala	Glu	Gln	Thr	Thr	Thr	Thr	Thr
385					390					395					400
Thr	His	Thr	Val	Val	Gln	Gln	Gln	Thr	Gly	Gly	Ile	Pro	Gln	His	Lys
			405						410					415	
Val	Ala	Leu	Met	Pro	Gln	Glu	Arg	Arg	Arg	Phe	Ser	Asp	Arg	Arg	Asp
			420					425					430		
Ser	Gln	Gly	Ser	Val	Ala	Ser	Thr	His	Trp	Ser	Asp	Ser	Ser	Ser	Glu
		435					440					445			
Val	Val	Asn	Pro	Tyr	Ala	Glu	Val	Gly	Gly	Ala	Arg	Asn	Ser	Leu	Ser
	450					455				460					
Ala	His	Gln	Pro	Glu	Glu	His	Ile	Tyr	Asp	Glu	Val	Ala	Ala	Asp	Pro
465					470					475					480
Gly	Tyr	Ser	Val	Ile	Gln	Asn	Phe	Ser	Gly	Ser	Gly	Pro	Val	Thr	Gly
			485						490					495	
Arg	Leu	Ile	Gly	Thr	Pro	Gly	Gln	Gly	Ile	Gln	Ser	Thr	Tyr	Ala	Leu
			500					505					510		
Leu	Ala	Asn	Ser	Gly	Gly	Leu	Arg	Leu	Gly	Met	Gly	Gly	Leu	Thr	Ser
		515					520					525			
Gly	Gly	Glu	Thr	Ala	Val	Ser	Ser	Val	Asn	Ala	Ala	Pro	Thr	Gln	Gly
	530					535					540				
Pro	Val	Arg	Phe	Val											
545															

<210> 11

<211> 558

<212> PRT

<213> Escherichia coli

<400> 11

Met	Pro	Ile	Gly	Asn	Leu	Gly	His	Asn	Pro	Asn	Val	Asn	Asn	Ser	Ile
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Pro	Pro	Ala	Pro	Pro	Leu	Pro	Ser	Gln	Thr	Asp	Gly	Ala	Gly	Gly	Arg
		20						25					30		
Gly	Gln	Leu	Ile	Asn	Ser	Thr	Gly	Pro	Leu	Gly	Ser	Arg	Ala	Leu	Phe
	35						40					45			
Thr	Pro	Val	Arg	Asn	Ser	Met	Ala	Asp	Ser	Gly	Asp	Asn	Arg	Ala	Ser
	50					55					60				
Asp	Val	Pro	Gly	Leu	Pro	Val	Asn	Pro	Met	Arg	Leu	Ala	Ala	Ser	Glu
65				70					75						80
Ile	Thr	Leu	Asn	Asp	Gly	Phe	Glu	Val	Leu	His	Asp	His	Gly	Pro	Leu
			85						90					95	
Asp	Thr	Leu	Asn	Arg	Gln	Ile	Gly	Ser	Ser	Val	Phe	Arg	Val	Glu	Thr
		100						105					110		
Gln	Glu	Asp	Gly	Lys	His	Ile	Ala	Val	Gly	Gln	Arg	Asn	Gly	Val	Glu
	115						120					125			
Thr	Ser	Val	Val	Leu	Ser	Asp	Gln	Glu	Tyr	Ala	Arg	Leu	Gln	Ser	Ile
	130					135						140			

Asp	Pro	Glu	Gly	Lys	Asp	Lys	Phe	Val	Phe	Thr	Gly	Gly	Arg	Gly	Gly	145	150	155	160
Ala	Gly	His	Ala	Met	Val	Thr	Val	Ala	Ser	Asp	Ile	Thr	Glu	Ala	Arg	165	170	175	
Gln	Arg	Ile	Leu	Glu	Leu	Leu	Glu	Pro	Lys	Gly	Thr	Gly	Glu	Ser	Lys	180	185	190	
Gly	Ala	Gly	Glu	Ser	Lys	Gly	Val	Gly	Glu	Leu	Arg	Glu	Ser	Asn	Ser	195	200	205	
Gly	Ala	Glu	Asn	Thr	Thr	Glu	Thr	Gln	Thr	Ser	Thr	Ser	Thr	Ser	Ser	210	215	220	
Leu	Arg	Ser	Asp	Pro	Lys	Leu	Trp	Leu	Ala	Leu	Gly	Thr	Val	Ala	Thr	225	230	235	240
Gly	Leu	Ile	Gly	Leu	Ala	Ala	Thr	Gly	Ile	Val	Gln	Ala	Leu	Ala	Leu	245	250	255	
Thr	Pro	Glu	Pro	Asp	Ser	Pro	Thr	Thr	Thr	Asp	Pro	Asp	Ala	Ala	Ala	260	265	270	
Ser	Ala	Thr	Glu	Thr	Ala	Thr	Arg	Asp	Gln	Leu	Thr	Lys	Glu	Ala	Phe	275	280	285	
Gln	Asn	Pro	Asp	Asn	Gln	Lys	Val	Asn	Ile	Asp	Glu	Leu	Gly	Asn	Ala	290	295	300	
Ile	Pro	Ser	Gly	Val	Leu	Lys	Asp	Asp	Val	Val	Ala	Asn	Ile	Glu	Glu	305	310	315	320
Gln	Ala	Lys	Ala	Ala	Gly	Glu	Glu	Ala	Lys	Gln	Gln	Ala	Ile	Glu	Asn	325	330	335	
Asn	Ala	Gln	Ala	Gln	Lys	Lys	Tyr	Asp	Glu	Gln	Gln	Ala	Lys	Arg	Gln	340	345	350	
Glu	Glu	Leu	Lys	Val	Ser	Ser	Gly	Ala	Gly	Tyr	Gly	Leu	Ser	Gly	Ala	355	360	365	
Leu	Ile	Leu	Gly	Gly	Gly	Ile	Gly	Val	Ala	Val	Thr	Ala	Ala	Leu	His	370	375	380	
Arg	Lys	Asn	Gln	Pro	Val	Glu	Gln	Thr	Thr	Thr	Thr	Thr	Thr	Thr	Thr	385	390	395	400
Thr	Thr	Thr	Ser	Ala	Arg	Thr	Val	Glu	Asn	Lys	Pro	Ala	Asn	Asn	Thr	405	410	415	
Pro	Ala	Gln	Gly	Asn	Val	Asp	Thr	Pro	Gly	Ser	Glu	Asp	Thr	Met	Glu	420	425	430	
Ser	Arg	Arg	Ser	Ser	Met	Ala	Ser	Thr	Ser	Ser	Thr	Phe	Phe	Asp	Thr	435	440	445	
Ser	Ser	Ile	Gly	Thr	Val	Gln	Asn	Pro	Tyr	Ala	Asp	Val	Lys	Thr	Ser	450	455	460	
Leu	His	Asp	Ser	Gln	Val	Pro	Thr	Ser	Asn	Ser	Asn	Thr	Ser	Val	Gln	465	470	475	480
Asn	Met	Gly	Asn	Thr	Asp	Ser	Val	Val	Tyr	Ser	Thr	Ile	Gln	His	Pro	485	490	495	
Pro	Arg	Asp	Thr	Thr	Asp	Asn	Gly	Ala	Arg	Leu	Leu	Gly	Asn	Pro	Ser	500	505	510	
Ala	Gly	Ile	Gln	Ser	Thr	Tyr	Ala	Arg	Leu	Ala	Leu	Ser	Gly	Gly	Leu	515	520	525	
Arg	His	Asp	Met	Gly	Gly	Leu	Thr	Gly	Gly	Ser	Asn	Ser	Ala	Val	Asn	530	535	540	
Thr	Ser	Asn	Asn	Pro	Pro	Ala	Pro	Gly	Ser	His	Arg	Phe	Val			545	550	555	

<211> 485

<212> PRT

<213> Escherichia coli

<400> 12

Asn	Ser	Val	Ala	Asp	Ala	Ala	Asp	Ser	Arg	Ala	Ser	Asp	Ile	Pro	Gly
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Leu	Pro	Thr	Asn	Pro	Leu	Arg	Phe	Ala	Ala	Ser	Glu	Val	Ser	Leu	His
			20					25					30		
Gly	Ala	Leu	Glu	Val	Leu	His	Asp	Lys	Gly	Gly	Leu	Asp	Thr	Leu	Asn
		35					40					45			
Ser	Ala	Ile	Gly	Ser	Ser	Leu	Phe	Arg	Val	Glu	Thr	Arg	Asp	Asp	Gly
	50					55					60				
Ser	His	Val	Ala	Ile	Gly	Gln	Lys	Asn	Gly	Leu	Glu	Thr	Thr	Val	Val
65					70					75					80
Leu	Ser	Glu	Gln	Glu	Phe	Ser	Ser	Leu	Gln	Ser	Leu	Asp	Pro	Glu	Gly
				85					90					95	
Lys	Asn	Lys	Phe	Val	Phe	Thr	Gly	Gly	Arg	Gly	Gly	Pro	Gly	His	Ala
			100					105					110		
Met	Val	Thr	Val	Ala	Ser	Asp	Ile	Ala	Glu	Ala	Arg	Gln	Arg	Ile	Ile
		115					120						125		
Asp	Lys	Leu	Glu	Pro	Lys	Asp	Thr	Lys	Glu	Thr	Lys	Glu	Pro	Gly	Asp
	130					135					140				
Pro	Asn	Ser	Gly	Glu	Gly	Lys	Ile	Ile	Glu	Ile	His	Thr	Ser	Thr	Ser
145					150					155					160
Thr	Ser	Ser	Leu	Arg	Ala	Asp	Pro	Lys	Leu	Trp	Leu	Ser	Leu	Gly	Thr
				165					170					175	
Ile	Ala	Ala	Gly	Leu	Ile	Gly	Met	Ala	Ala	Thr	Gly	Ile	Ala	Gln	Ala
			180					185					190		
Val	Ala	Leu	Thr	Pro	Glu	Pro	Asp	Asp	Pro	Ile	Thr	Thr	Asp	Pro	Asp
		195					200						205		
Ala	Ala	Ala	Asn	Thr	Ala	Glu	Ala	Ala	Ala	Lys	Asp	Gln	Leu	Thr	Lys
	210					215					220				
Glu	Ala	Phe	Gln	Asn	Pro	Asp	Asn	Gln	Lys	Val	Asn	Ile	Asp	Glu	Asn
225					230					235					240
Gly	Asn	Ala	Ile	Pro	Ser	Gly	Glu	Leu	Lys	Asp	Asp	Val	Val	Ala	Gln
				245					250					255	
Ile	Ala	Glu	Gln	Ala	Lys	Ala	Ala	Gly	Glu	Gln	Ala	Arg	Gln	Glu	Ala
		260						265					270		
Ile	Glu	Ser	Asn	Ser	Gln	Ala	Gln	Gln	Lys	Tyr	Asp	Glu	Gln	His	Ala
	275						280					285			
Lys	Arg	Glu	Gln	Glu	Met	Ser	Leu	Ser	Ser	Gly	Val	Gly	Tyr	Gly	Ile
	290					295					300				
Ser	Gly	Ala	Leu	Ile	Leu	Gly	Gly	Gly	Ile	Gly	Ala	Gly	Val	Thr	Ala
305					310					315					320
Ala	Leu	His	Arg	Lys	Asn	Gln	Pro	Ala	Glu	Gln	Thr	Ile	Thr	Thr	Arg
				325					330					335	
Thr	Val	Val	Asp	Asn	Gln	Pro	Thr	Asn	Asn	Ala	Ser	Ala	Gln	Gly	Asn
			340					345					350		
Thr	Asp	Thr	Ser	Gly	Pro	Glu	Glu	Ser	Pro	Ala	Ser	Arg	Arg	Asn	Ser
	355					360						365			
Asn	Ala	Ser	Leu	Ala	Ser	Asn	Gly	Ser	Asp	Thr	Ser	Ser	Thr	Gly	Thr
	370					375					380				
Val	Glu	Asn	Pro	Tyr	Ala	Asp	Val	Gly	Met	Pro	Arg	Asn	Asp	Ser	Leu
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<211> 22
<212> PRT
<213> Escherichia coli
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Gly Val Gly Ser Ile Ser
      20
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